

# Calculation Methods for Grain Ounce Equivalents for Grades K-12 in the National School Lunch Program and School Breakfast Patterns

## School Year 2021-22

This guidance applies to the meal patterns for grades K-12 in the U.S. Department of Agriculture's (USDA) National School Lunch Program (NSLP), School Breakfast Program (SBP), and Seamless Summer Option (SSO) of the NSLP, which follows the NSLP and SBP meal patterns. The requirements are different for the ASP meal pattern for grades K-12. For guidance on calculating grain servings for the ASP, refer to the Connecticut State Department of Education's (CSDE) resource, [Calculation Methods for Grains/ Breads Servings for Grades K-12 in the ASP](#). For additional guidance on the NSLP and SBP meal patterns and crediting requirements for the grains component, refer to the CSDE's guide, [Menu Planning Guide for School Meals for Grades K-12](#), and visit the CSDE's [Meal Patterns for Grades K-12 in School Nutrition Programs](#) and [Crediting Foods in School Nutrition Programs](#) webpages.



## Overview of Crediting Requirements for Grains

The lunch and breakfast meal patterns for grades K-12 require that all grain products and recipes must be whole grain-rich (WGR). For information on the WGR criteria for grades K-12, refer to the CSDE's guide, [Meeting the Whole Grain-rich Requirement for the NSLP and SBP Meal Patterns for Grades K-12](#), and crediting handouts, [Crediting Whole Grains in the NSLP and SBP](#), [Crediting Enriched Grains in the NSLP and SBP](#), and [Crediting Breakfast Cereals for Grades K-12 in the NSLP and SBP](#).

**Note:** Per USDA memo, [COVID-19: Child Nutrition Response #90: Nationwide Waiver to Allow Specific School Meal Pattern Flexibility for School Year 2021-2022](#), school food authorities (SFAs) that cannot meet the WGR requirement during school year 2021-22 (through June 30, 2022) must request a waiver from the CSDE. For more information, visit the "[How To](#)" section of the CSDE's Operating Child Nutrition Programs during COVID-19 Outbreaks webpage.



# Calculation Methods for Grain Ounce Equivalents for Grades K-12 in the NSLP and SBP

## Overview of Ounce Equivalents

The required quantities for grains component are in ounce equivalents. The USDA allows two methods for determining the ounce equivalents of creditable grain products and recipes. Method 1 (weight or volume) is used for commercial grain products and may also be used for standardized recipes that indicate the weight of the prepared (cooked) serving. Method 2 (creditable grains) is used for standardized recipes and may also be used for commercial grain products that have a product formulation statement (PFS) indicating the weight of creditable grains per serving.

School food authorities (SFAs) may use either method but must document how the crediting information is determined for each grain product and recipe (refer to [“Choosing a Calculation Method”](#) in this document). For some commercial products, method 2 is required (refer to [“When Method 2 is Required for Commercial Products”](#) in this document).

SFAs are not required to use these methods for commercial products with a Child Nutrition (CN) label. CN-labeled products credit based on the stated crediting information for grain ounce equivalents. CN labels are available only for main dish entrees that contribute to the meat/meat alternates component, such as pizza, breaded chicken nuggets, and cheese ravioli. However, CN labeled foods usually indicate the contribution of grains, vegetables, and fruits that are part of these products. For more information, refer to the CSDE’s resource, [Child Nutrition \(CN\) Labeling Program](#).

## Method 1: Weights or Volumes (USDA’s Exhibit A Chart)

Method 1 uses the USDA’s chart, [Exhibit A: Grain Requirements for Child Nutrition Programs](#) (Exhibit A) to determine the required weight (groups A-G) or volume (groups H-I) for the grain group where the product belongs. The required amounts for the grains component are not the same for all Child Nutrition Programs. The CSDE’s resource, [Grain Ounce Equivalents for Grades K-12 in the NSLP and SBP](#), lists the Exhibit A grain ounce equivalents that apply to the meal patterns for grades K-12.

The amount of a creditable grain food that provides 1 ounce equivalent varies because different types of foods contain different amounts of creditable grains. For example, to credit as 1 ounce equivalent of the grains component, a roll must weigh 28 grams (1 ounce), a corn muffin must weigh 34 grams (1.2 ounces), and a blueberry muffin must weigh 55 grams (2 ounces). The minimum amount that credits toward the grains component is  $\frac{1}{4}$  ounce equivalent.

## Calculation Methods for Grain Ounce Equivalents for Grades K-12 in the NSLP and SBP

- **Groups A-G (baked goods)** include baked goods (such as crackers, breads, rolls, taco shells, muffins, waffles, pancakes, and grain-based desserts, e.g., cookies, cake, granola bars, and pastries). The amount of a food that provides 1 ounce equivalent varies from 22 grams (0.8 ounces) for foods in group A to 115 grams (4.4 ounces) for foods in group
- **Group H** includes cereal grains, such as pasta, cooked breakfast cereals, and other cereal grains, e.g., amaranth, barley, buckwheat, cornmeal, corn grits, farina, kasha, millet, oats, quinoa, wheat berries, and rolled wheat. These foods require  $\frac{1}{2}$  cup cooked or 28 grams (1 ounce) dry to credit as 1 ounce equivalent of the grains component. **Note:** Cereal grains typically credit based on the **cooked** serving, but menu planners may choose to credit cereal grains using the dry uncooked weight. For guidance on crediting cooked breakfast cereals, refer to the CSDE’s resource, [Crediting Breakfast Cereals for Grades K-12 in the NSLP and SBP](#).

Dry cereal grains used as an ingredient in a recipe (such as rolled oats in bread) credit the same as groups A-G; they require 16 grams of creditable grains (to credit as 1 ounce equivalent).

- **Group I** includes RTE cold breakfast cereals. These foods require 1 ounce (28 grams) to credit as 1 ounce equivalent of the grains component. A 1-ounce serving equals 1 cup of flaked or round cereal,  $1\frac{1}{2}$  cups of puffed cereal, and  $\frac{1}{4}$  cup of granola. For guidance on crediting RTE breakfast cereals, refer to the CSDE’s resource, [Crediting Breakfast Cereals for Grades K-12 in the NSLP and SBP](#).

The limit for noncreditable grains does not apply to fortified WGR RTE breakfast cereals. Fortification is not required for RTE breakfast cereals that are 100 whole grain.

Method 1 applies to all creditable commercial grain products. This method may also be used for standardized recipes if the SFA knows the weight (grams or ounces) of the prepared (cooked) serving. For more information, refer to “[Using Method 1 \(USDA’s Exhibit A chart\)](#)” in this document.

# Calculation Methods for Grain Ounce Equivalents for Grades K-12 in the NSLP and SBP

## Using Method 1 for commercial products

The product's Nutrition Facts label or PFS must indicate the weight (ounces or grams) of the manufacturer's serving. The USDA's online [Exhibit A Grains Tool](#) helps menu planners determine the ounce equivalents of commercial grain products. For more information, watch the USDA's webinars, [Exhibit A Grains Tool to the Rescue](#) and [How to Maximize the Exhibit A Grains Tool](#).

**Note:** For some commercial grain products, SFAs must use method 2 to determine the ounce equivalents. For more information, refer to “[When Method 2 is Required for Commercial Products](#)” in this document.

## Using method 1 for foods made from scratch

SFAs must have standardized recipes on file that indicate the weight of the prepared (cooked) serving of foods made from scratch. Many standardized recipes do not list the serving weight. If the standardized recipe does not provide this information, SFAs could determine the average weight per serving by weighing several servings of the recipe. For more information, refer to the CSDE's [Yield Study Data Form for Child Nutrition Programs](#).

## Method 2: Creditable Grains

Method 2 determines the ounce equivalents for creditable grain products and standardized recipes by calculating the total weight (grams) of creditable grains per serving. The grams of creditable grains are obtained from the commercial product's PFS or calculated from the grain quantities in the SFA's recipe. To credit as 1 ounce equivalent of the grains component, foods in groups A-G of the USDA's Exhibit A chart must contain **16 grams** of creditable grains (including at least 8 grams of whole grains) and foods in groups H-I must contain **28 grams** of creditable grains (including at least 14 grams of whole grains).

## Using method 2 for commercial products

SFAs must obtain a PFS from the manufacturer that documents the weight of the creditable grains per serving. This information cannot be determined from the product's Nutrition Facts label or packaging.

For information on PFS forms, refer to the CSDE's resources, [Product Formulation Statements](#) and [Accepting Processed Product Documentation in the NSLP and SBP](#), and the USDA's [Product Formulation Statement for Documenting Grains in the Child Nutrition Programs](#), and [Tips for Evaluating a Manufacturer's Product Formulation Statement](#). For additional guidance on documentation for commercial products, visit the “[Crediting Commercial Processed Products](#)” section of the CSDE's Crediting Foods in School Nutrition Programs webpage.

# Calculation Methods for Grain Ounce Equivalents for Grades K-12 in the NSLP and SBP

## Using method 2 for foods made from scratch

Foods made from scratch must have a standardized recipe that indicates the weight of each grain ingredient. SFAs must determine the grams of creditable grains per serving from the weight of each grain ingredient listed in the standardized recipe. For assistance with recipe calculations, such as converting fractions to decimals, refer to the Institute of Child Nutrition's (ICN) [Basics at a Glance Portion Control Poster](#) and the decimal equivalents of fractions in the "[Introduction](#)" section of the USDA's FBG.

Menu planners can use the FBG's online [Recipe Analysis Workbook](#) to search for ingredients, develop a standardized recipe, and determine the recipe's meal pattern contribution per serving. To access this tool, users must create a free account on the USDA's FBG website. For additional guidance on determining the grain servings of recipes, visit the "[Crediting Foods Made from Scratch](#)" section of the CSDE's Crediting Foods in School Nutrition Programs webpage.

**Note:** If the recipe lists grain ingredients by volume (e.g., cups and quarts) instead of weight (pound and ounces), each measurement must be converted to the equivalent weight (grams). For more information, refer to "[Method 2 calculation for recipes listing the volume of grain ingredients](#)" in this document.

## When Method 2 is Required for Commercial Products

SFAs may need to obtain additional information to determine the crediting information for some commercial grain products. A PFS is required for commercial products when any of the following situations apply:

- a whole grain is not the first ingredient, but the product contains more than one whole grain;
- the first ingredient is a blend of whole grain and enriched flour;
- a combination food that contains a grain portion is not CN labeled;
- the manufacturer claims that the product's serving size is less than the required weight or volume in the USDA's Exhibit A chart; or
- the product is not listed in the USDA's Exhibit A chart.

The requirements for each situation are summarized below. The manufacturer's PFS must indicate the weight (grams) of each creditable grain per serving and demonstrate how the product provides that amount according to the FBG or USDA's regulations, guidance, or policies. If the manufacturer will not supply a PFS, or the PFS does not provide the appropriate documentation, the product cannot credit as the grains component in the meal patterns for school nutrition programs.

# Calculation Methods for Grain Ounce Equivalents for Grades K-12 in the NSLP and SBP

SFAs must verify the accuracy of the PFS **before** including the product in reimbursable meals and snacks, and must maintain all crediting documentation on file. The CSDE will review this information during the Administrative Review of the school nutrition programs. For more information, refer to the USDA’s document, *Tips for Evaluating a Manufacturer’s Product Formulation Statement*.

## **Situation 1: Whole grain is not the first ingredient, but the product contains more than one whole grain**

A PFS is required when a whole grain is not the first ingredient (excluding water), but the ingredients statement for the commercial grain product (or the *grain portion* of a combination food) contains more than one whole grain. For grain products (such as breads, rolls, muffins, and waffles), the PFS must document that the combined weight of all whole grains is the greatest ingredient by weight. For combination foods (such as pizza, lasagna, and breaded chicken), the PFS must document that the combined weight of all whole grains in the *grain portion* is the greatest ingredient by weight in the *grain portion*.

For example, the yellow corn flour in the product below is not a whole grain. For this product to credit in the NSLP and SBP meal patterns, the PFS must indicate that the combined weight of the creditable grains (whole-wheat flour, rolled oats, and oat bran) is more than the weight of the yellow corn flour (noncreditable grain).

- Ingredients: *Yellow corn flour*, *whole-wheat flour*, sugar, *rolled oats*, wheat gluten. Contains 2% or less of each of the following: honey, salt, *oat bran*, yeast, molasses.

## **Situation 2: First ingredient is a blend of whole grain and enriched flour**

A PFS is required when a commercial product contains a blend of whole and enriched flour, e.g., “flour blend (whole-wheat flour, enriched flour).” Flour blends do not indicate if the whole grain is the greatest grain ingredient by weight. For example, if the flour blend is 40 percent of the product’s weight (25 percent whole-wheat flour and 15 percent enriched flour) and the first ingredient after the flour blend is sugar (30 percent of the product’s weight), the sugar weighs more than the whole-wheat flour. SFAs must obtain a PFS from the manufacturer to document that either the whole grain content is at least 8 grams per ounce equivalent (groups A-G), or the weight of the whole grain in the flour blend is more than the first ingredient listed after the flour blend. For example, the PFS for the product below must indicate that the whole-wheat flour in the flour blend weighs more than the brown sugar.



## Calculation Methods for Grain Ounce Equivalents for Grades K-12 in the NSLP and SBP

- Ingredients: Water, **flour blend** [*whole-wheat flour, enriched flour (wheat flour, niacin, reduced iron, thiamine mononitrate, riboflavin, enzyme, folic acid)*], water, **brown sugar**, corn oil, dough conditioner (soybean oil, vegetable glycerides, soy flakes), yeast, salt, wheat gluten, enzyme.

A PFS is not required for flour blends that contain only whole grains, such as “flour blend (whole-wheat flour, whole-grain oats).” Commercial grain products that contain 100 percent whole grains are WGR.

### **Situation 3: Combination food that contains a grain portion is not CN labeled**

A PFS is required when a commercial combination food that contains a grain portion is not CN labeled. Examples include pizza crust in pizza, noodles in lasagna, and baked chicken coated with breadcrumbs or crushed cereal flakes. The PFS must document that whole grains are the greatest ingredient by weight in the grain portion, and that the product meets the limit for noncreditable grains.

### **Situation 4: Manufacturer claims serving size is less than USDA’s Exhibit A chart**

A PFS is required when a manufacturer claims that a commercial grain product can provide the required creditable grains using a serving that is less than the minimum weight or volume listed in the USDA’s Exhibit A chart (refer to the CSDE’s resource, [Grain Ounce Equivalents for Grades K-12 in the NSLP and SBP](#)). An example is a manufacturer that claims a  $\frac{3}{4}$ -ounce whole-grain bagel credits as 1 ounce equivalent of the grains component. The product’s PFS must indicate how the manufacturer obtained this crediting information based on the FBG or the USDA’s regulations, guidance, or policies.

### **Situation 5: Product is not listed in USDA’s Exhibit A chart**

A PFS is required when a commercial WGR product is not listed in any of the nine groups of the USDA’s Exhibit A chart (refer to the CSDE’s resource, [Grain Ounce Equivalents for Grades K-12 in the NSLP and SBP](#)). The PFS must document that whole grains are the greatest ingredient by weight in the grain portion, and that the product meets the limit for noncreditable grains. It must also indicate the weight of each creditable grain and how the manufacturer obtained the product’s crediting information based on the USDA’s regulations, guidance, or policies.

# Calculation Methods for Grain Ounce Equivalents for Grades K-12 in the NSLP and SBP

## Choosing a Calculation Method

SFAs may choose to use either crediting method but must document which method is used for each product. For some commercial grain products, methods 1 and 2 may result in a different crediting contribution. For example, a 1-ounce whole-grain bagel might credit as 1 ounce equivalent of the grains component using method 1 (USDA's Exhibit A chart), but might credit as 1½ ounce equivalents using method 2 (creditable grains).

SFAs should use the same calculation method each time the same product is on the menu. For example, if method 2 is used to determine the crediting of a whole-grain bagel, that same bagel should always be credited using method 2. The CSDE strongly recommends choosing one calculation method for consistent crediting. This simplifies menu planning and assists SFAs with documenting compliance for the grains component.

## Sample Calculations for Commercial Products

This section demonstrates how to calculate the ounce equivalents of WGR commercial grain products using either the appropriate weight (groups A-G) or volume (groups H-I) in the USDA's Exhibit A chart (method 1), or the weight of creditable grains per serving (method 2). SFAs may also use the USDA's [Exhibit A Grains Tool](#) to automatically calculate this information (refer to “[Using Method 1 for commercial products](#)” in this document).

### Sample Calculations for Commercial Products in Groups A-G

Table 1 shows a sample calculation using method 1 for a commercial product in group C, whole-wheat pancakes. Table 2 shows a sample calculation for this same product using method 2. These examples show how each method can result in a different crediting contribution for the same product. For some products, methods 1 and 2 result in the same crediting contribution. SFAs may use either method but must document how the crediting information was determined (refer to “[Choosing a Calculation Method](#)” in this document).



To determine the meal pattern contribution of a commercial grain product using method 1, menu planners must use the **weight** (ounces or grams) of one serving from the product's Nutrition Facts label or PFS. If the product lists the serving size in ounces and grams, menu planners may choose to use either one. To convert ounces to grams, multiply ounces by 28.35.



# Calculation Methods for Grain Ounce Equivalents for Grades K-12 in the NSLP and SBP

**Table 1. Using method 1 (USDA's Exhibit A chart) to calculate the ounce equivalents for commercial products in groups A-G**

## Mini Whole-Wheat Pancakes <sup>1</sup>

**Manufacturer's serving size:**

5 pancakes (1.75 ounces)

**Group C (USDA's Exhibit A chart):**

1 ounce equivalent = 34 grams or 1.2 ounces

**Ingredients:** Water, whole-wheat flour, enriched flour (wheat flour, niacin, ferrous sulfate, thiamin mononitrate, riboflavin, folic acid), sugar, canola oil. Contains 2% or less of: leavening (baking soda, sodium aluminum phosphate, monocalcium phosphate), eggs, salt, buttermilk.

1. List the weight of the **manufacturer's serving** from the product's Nutrition Facts label or PFS (1 ounce = 28.35 grams).

<b>A</b>	<b>1.75</b> ounces
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2. List the required weight for **1 ounce equivalent** for the product's group (A-G) in the USDA's Exhibit A chart. <sup>2</sup>

<b>B</b>	<b>1.2</b> ounces
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3. Determine the **ounce equivalents** in one serving of the product: Divide A by B.

<b>C</b>	<b>1.46</b> ounce equivalents per manufacturer's serving
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4. Round **down** the number in C to the **nearest ¼ ounce equivalent**. For example, 1.49 and 1.27 round down to 1.25; and 1.24 rounds down to 1.

<b>D</b>	<b>1.25</b> ounce equivalents per manufacturer's serving (rounded)
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**Summary of crediting information:** The manufacturer's serving size (5 mini-pancakes) credits as **1¼ ounce equivalents** of the grains component.

<sup>1</sup> This product is WGR because whole-wheat flour is the first ingredient (excluding water), enriched flour is the only other grain ingredient, and the product does not contain any noncreditable grains. For guidance on identifying WGR foods, refer to the CSDE's guide, [Meeting the Whole Grain-rich Requirement for the NSLP and SBP Meal Patterns for Grades K-12](#).

<sup>2</sup> Calculations use the weight for the appropriate group in the USDA's Exhibit A chart (refer to the CSDE's resource, [Grain Ounce Equivalents for Grades K-12 in the NSLP and SBP](#)). Pancakes are in group C, which requires 34 grams (1.2 ounces) to credit as 1 ounce equivalent of the grains component.

# Calculation Methods for Grain Ounce Equivalents for Grades K-12 in the NSLP and SBP

**Table 2. Using method 2 (creditable grains) to calculate the ounce equivalents for commercial products in groups A-G**

## Mini Whole-Wheat Pancakes <sup>1</sup>

**Manufacturer's serving size:**  
5 pancakes (1.75 ounces)

**Creditable grains per serving (from product's PFS):**

Whole-wheat flour: 16 grams

Enriched flour: 14 grams

Noncreditable grains: 0 grams

**Ingredients:** Water, whole-wheat flour, enriched flour (wheat flour, niacin, ferrous sulfate, thiamin mononitrate, riboflavin, folic acid), sugar, canola oil. Contains 2% or less of: leavening (baking soda, sodium aluminum phosphate, monocalcium phosphate), eggs, salt, buttermilk.

1. List the **combined weight (grams)** of whole and enriched grains in one serving from the product's PFS (1 ounce = 28.35 grams). <sup>2</sup>

16 grams of whole-wheat flour +  
14 grams of enriched flour =  
**30 grams** of creditable grains

<b>A</b>	<b>30</b> grams
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2. Determine the **ounce equivalents** in one serving of the product: Divide A by 16 (1 ounce equivalent for groups A-G = **16 grams** of creditable grains).

<b>B</b>	<b>1.88</b> ounce equivalents per manufacturer's serving
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3. Round **down** the number in B to the **nearest ¼ ounce equivalent**. For example, 1.49 and 1.27 round down to 1.25; and 1.24 rounds down to 1.

<b>C</b>	<b>1.75</b> ounce equivalents per manufacturer's serving (rounded)
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**Summary of crediting information:** The manufacturer's serving size (five mini-pancakes) credits as **1¾ ounce equivalents** of the grains component.

<sup>1</sup> This product is WGR because the whole-wheat flour (16 grams) weighs more than the enriched flour (14 grams) and the product does not contain any noncreditable grains. For guidance on identifying WGR foods, refer to the CSDE's guide, *Meeting the Whole Grain-rich Requirement for the NSLP and SBP Meal Patterns for Grades K-12*

<sup>2</sup> To credit a product using method 2, SFAs must obtain a manufacturer's PFS stating the weight of all creditable and noncreditable grains.

# Calculation Methods for Grain Ounce Equivalents for Grades K-12 in the NSLP and SBP

## Sample Calculations for Commercial Products in Group H

Table 3 shows a sample calculation using method 1 to determine the ounce equivalents for a commercial whole-grain pasta product in group H. Table 4 shows a sample calculation for this same product using method 2.

These examples show how each method can result in the same crediting contribution for a product. For some products, methods 1 and 2 result in a different crediting contribution. SFAs may use either method but must document how the crediting information was determined (refer to “[Choosing a Calculation Method](#)” in this document).

Cereal grains in group H typically credit based on the **cooked** serving, i.e.,  $\frac{1}{2}$  cup of cooked cereal credits as 1 ounce equivalent of the grains component. However, the menu planner may choose to calculate the product’s ounce equivalents based on the **dry uncooked weight**, i.e., 1 ounce (28 grams) of dry cereal grains credits as 1 ounce equivalent of the grains component. The menu planner must determine the weight (ounces or grams) of one serving from the commercial product’s Nutrition Facts label or the manufacturer’s PFS. If the product lists the serving size in ounces and grams, the menu planner may choose to use either one.



# Calculation Methods for Grain Ounce Equivalents for Grades K-12 in the NSLP and SBP

**Table 3. Using method 1 (USDA's Exhibit A chart) to calculate the ounce equivalents for commercial products in group H**

## Whole-grain Pasta <sup>1</sup>

**Manufacturer's serving size:**

32 grams dry (½ cup cooked)

**Group H (USDA's Exhibit A chart):**

1 ounce equivalent = ½ cup cooked or 28 grams dry

**Ingredients:** Whole-grain durum wheat flour, enriched wheat flour.

1. List the weight of the **manufacturer's serving** from the product's Nutrition Facts label or PFS (1 ounce = 28.35 grams).

<b>A</b>	<b>32</b>	grams
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2. List the required uncooked (dry) weight for **1 ounce equivalent** for the product's group in the USDA's Exhibit A chart (group H). <sup>1</sup>

<b>B</b>	<b>28</b>	grams
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3. Determine the **ounce equivalents** in one serving of the product: Divide A by B.

<b>C</b>	<b>1.14</b>	ounce equivalents per manufacturer's serving
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4. Round **down** the number in C to the nearest ¼ **ounce equivalent**. For example, 1.49 and 1.27 round down to 1.25, and 1.24 rounds down to 1.

<b>D</b>	<b>1</b>	<b>ounce equivalent per manufacturer's serving (rounded)</b>
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**Summary of crediting information:** The manufacturer's serving size (32 grams dry) credits as **1 ounce equivalent** of the grains component.

<sup>1</sup> This product is WGR because whole-grain flour is the first and only ingredient. For guidance on identifying WGR foods, refer to the CSDE's guide, *Meeting the Whole Grain-rich Requirement for the NSLP and SBP Meal Patterns for Grades K-12*.

<sup>2</sup> Calculations use the weight for the appropriate grain group in the USDA's Exhibit A chart (refer to the CSDE's resource, *Grain Ounce Equivalents for Grades K-12 in the NSLP and SBP*). Pasta is in group H, which requires 28 grams dry to credit as 1 ounce equivalent of the grains component.

# Calculation Methods for Grain Ounce Equivalents for Grades K-12 in the NSLP and SBP

**Table 4. Using method 2 (creditable grains) to calculate the ounce equivalents for commercial products in group H**

## Whole-grain Pasta <sup>1</sup>

### Manufacturer's serving size:

32 grams dry (½ cup cooked)

### Group H (USDA's Exhibit A chart):

1 ounce equivalent = ½ cup cooked or 28 grams dry

### Creditable grains per serving (from product's PFS):

Whole-wheat flour: 14 grams

Enriched flour: 12 grams

Noncreditable grains: 0 grams

**Ingredients:** Whole-grain durum wheat flour, enriched wheat flour.

1. List the **combined weight (grams)** of whole and enriched grains in one serving from the product's PFS (1 ounce = 28.35 grams). <sup>2</sup>

15 grams of whole-wheat flour +

14 grams of enriched flour =

**29 grams of creditable grains**

**A**      **29**      grams

2. Determine the **ounce equivalents** in one serving of the product: Divide A by 28 (1 ounce equivalent for group H = **28 grams of creditable grains**).

**B**      **1.04**      ounce equivalents per manufacturer's serving

3. Round **down** the number in B to the **nearest ¼ ounce equivalent**. For example, 1.49 and 1.27 round down to 1.25; and 1.24 rounds down to 1.

**C**      **1.0**      ounce equivalents per manufacturer's serving (rounded)

**Summary of crediting information:** The manufacturer's serving size (½ cup cooked) credits as **1 ounce equivalent** of the grains component.

<sup>1</sup> This product is WGR because the whole-wheat flour (15 grams) weighs more than the enriched flour (14 grams) and the product does not contain any noncreditable grains.

<sup>2</sup> To credit a product using method 2, SFAs must obtain a manufacturer's PFS stating the weight of all creditable and noncreditable grains.

# Calculation Methods for Grain Ounce Equivalents for Grades K-12 in the NSLP and SBP

## Sample Calculations for Foods Made from Scratch

SFAs must have standardized recipes on file to document the meal pattern contribution of grain foods made from scratch, such as breads, rolls, muffins, pizza dough, and pancakes. This section demonstrates how to calculate the ounce equivalents of standardized recipes using either the appropriate weight (groups A-G) or volume (groups H-I) in the USDA's Exhibit A chart (method 1), or the weight of creditable grains per serving (method 2). SFAs may also use the USDA's [Recipe Analysis Workbook](#) to automatically calculate this information (refer to “[Using method 2 for foods made from scratch](#)” in this document).

SFAs do not need to calculate ounce equivalents for grain foods prepared from the USDA's recipes for Child Nutrition Programs. These standardized recipes specify the meal pattern crediting information per serving. For links to the USDA's recipes, visit the Institute of Child Nutrition's (ICN) [Child Nutrition Recipe Box](#) and the “[Recipes](#)” section of the CSDE's [Menu Planning for Child Nutrition Programs](#) webpage. For information on standardized recipes, visit the “[Crediting Foods Prepared on Site for Grades K-12 in School Nutrition Program](#)” section of the CSDE's Crediting Foods in School Nutrition Programs webpage.


## Method 2 calculation for recipes listing the weight of grain ingredients

Table 5 shows how to use method 2 to calculate the ounce equivalents for a standardized recipe that lists the weight of the grain ingredients. Foods in groups A-G must contain **16 grams** of creditable grains (including at least 8 grams of whole grains) per recipe serving to credit as 1 ounce equivalent of the grains component



# Calculation Methods for Grain Ounce Equivalents for Grades K-12 in the NSLP and SBP

**Table 5. Using method 2 (creditable grains) to calculate the ounce equivalents for recipes listing the weight of grain ingredients**

<b>WGR standardized recipe for multi-grain bread <sup>1</sup></b>		
<b>Yield:</b> 100 servings	<b>Grain ingredients:</b>	
<b>Serving size:</b> 1 piece	Whole-wheat flour: 8 ounces (0.5 pound)	
	Rolled oats: 1 pound 2 ounces (1.125 pounds) <sup>2</sup>	
	Enriched flour: 1 pound	
	Enriched cornmeal: 8 ounces (0.5 pound) <sup>2</sup>	
1. Determine the <b>total weight (pounds)</b> of all <b>creditable grains</b> in the recipe (16 ounces = 1 pound). Convert fractions to decimals, e.g., 1¾ pounds equals 1.75 pounds.	<b>A</b>	<b>3.125</b> pounds of creditable grains
1.625 pounds of whole grains (whole-wheat flour and rolled oats) + 1.5 pounds of enriched grains (enriched flour and enriched cornmeal) = <b>3.125 pounds of creditable grains</b>		
2. Determine the <b>total grams of creditable grains</b> in the recipe: Multiply A by 453.6 (1 pound = 453.6 grams).	<b>B</b>	<b>1417.5</b> grams of creditable grains
3. List the <b>number of servings</b> in the recipe.	<b>C</b>	<b>100</b> servings per recipe
4. Determine the <b>grams of creditable grains</b> per recipe serving: Divide B by C.	<b>D</b>	<b>14.175</b> grams of creditable grains per recipe serving
5. Determine the <b>ounce equivalents</b> per recipe serving: Divide D by 16 (1 ounce equivalent = 16 grams of creditable grains). <sup>2</sup>	<b>E</b>	<b>0.89</b> ounce equivalents
6. Round <b>down</b> the number in E to the <b>nearest ¼ ounce equivalent</b> . For example, 1.49 and 1.27 round down to 1.25; and 1.24 rounds down to 1.	<b>F</b>	<b>0.75</b> ounce equivalents (rounded)

**Summary of crediting information:** The recipe's serving (one piece) credits as ¾ ounce equivalent of the grains component.

<sup>1</sup> This recipe is WGR because the whole grains (1.625 pounds) weigh more than the enriched grains (1.5 pounds), and the recipe does not contain any noncreditable grains.

<sup>2</sup> Dry cereal grains used as an ingredient in a recipe (such as rolled oats and cornmeal) credit the same as groups A-G. They require 16 grams of creditable grains to credit as 1 ounce equivalent.

# Calculation Methods for Grain Ounce Equivalents for Grades K-12 in the NSLP and SBP

## Method 2 calculation for recipes listing the volume of grain ingredients

If the recipe lists grain ingredients only by volume (e.g., cups and quarts), the SFA must first convert each measurement to the equivalent **weight (grams)**. Any of the methods below may be used for this calculation.

- **Nutrition Facts label:** Use the manufacturer's serving size information on the Nutrition Facts label for the grain ingredient, such as whole-wheat flour, enriched flour, or whole-grain cornmeal. Multiply the weight (grams) of the manufacturer's serving by 4 to get the grams per cup, then multiply the grams per cup by the number of cups used in the recipe.



For example, a recipe contains 2 cups of whole-wheat flour and 2 cups of enriched flour.

- Whole wheat flour: The Nutrition Facts label for the whole-wheat flour states that  $\frac{1}{4}$  cup weighs 32 grams, which equals 128 grams per cup. Multiply the grams per cup (128 grams) by the number of cups used in the recipe (2 cups) to determine the total weight of the grain ingredient in the recipe (256 grams).
- Enriched flour: The Nutrition Facts label for the enriched flour states that  $\frac{1}{4}$  cup weighs 30 grams, which equals 120 grams per cup. Multiply the weight per cup (120 grams) by the amount of enriched flour used in the recipe (2 cups) to determine the weight of the enriched flour used in the recipe (240 grams).

This recipe is WGR because the whole-wheat flour (256 grams) weighs more than the enriched flour (240 grams).

- **Nutrient database:** Search the USDA's [FoodData Central](#) nutrient database for grain ingredients, such as whole-wheat flour or yellow cornmeal. Enter "1" in the data field for the cup measurement, and the database will provide the weight of 1 cup of that ingredient.
- **Volume equivalent chart:** Use volume equivalent charts that list the weight of 1 cup of grain ingredients. Table 6 shows the weight per cup for some commonly used grain ingredients.
- **Yield study:** Determine the average weight of 1 cup of the grain ingredient by measuring and weighing several samples. For more information, refer to the CSDE's [Yield Study Data Form for Child Nutrition Programs](#).

## Calculation Methods for Grain Ounce Equivalents for Grades K-12 in the NSLP and SBP

Table 7 shows how to use method 2 to calculate the ounce equivalents for a recipe that lists the grain ingredients in cups.

<b>Table 6. Weights of 1 cup of commonly used grain ingredients <sup>1</sup></b>	
<b>Food item</b>	<b>Weight (grams) per cup</b>
Barley, flour or meal <sup>2</sup>	148
Barley, hulled <sup>2</sup>	184
Barley, pearled, uncooked <sup>2</sup>	200
Barley, pearled, cooked <sup>2</sup>	157
Breadcrumbs, dry, grated, plain <sup>2</sup>	108
Breadcrumbs, plain, dry, grated, seasoned <sup>2</sup>	120
Breadcrumbs, plain soft, white <sup>2</sup>	45
Bulgur, uncooked <sup>2</sup>	140
Bulgur, cooked <sup>2</sup>	182
Cereal, General Mills Cheerios <sup>3</sup>	28
Cereal, General Mills Corn Chex <sup>3</sup>	31
Cereal, General Mills Rice Chex <sup>3</sup>	27
Cereal, General Mills Wheat Chex <sup>3</sup>	47
Cereal, General Mills Wheaties <sup>3</sup>	36
Cereal, Kellogg's All-Bran Bran Buds <sup>4</sup>	90
Cereal, Kellogg's All-Bran Original <sup>4</sup>	62
Cereal, Kellogg's Corn Flakes crumbs <sup>4</sup>	88
Cereal, Kellogg's Corn Flakes, whole <sup>4</sup>	28
Cereal, Kellogg's Rice Krispies <sup>5</sup>	26
Cereal, Quaker Puffed Rice <sup>5</sup>	14
Cereal, Quaker Puffed Wheat <sup>5</sup>	28
Cornmeal, enriched, uncooked, yellow, degerminated <sup>2</sup>	157
Cornmeal, enriched, uncooked, yellow, whole grain <sup>2</sup>	122
Cracker crumbs, graham, crushed <sup>2</sup>	84
Cracker crumbs, snack, standard snack-type, regular, crushed <sup>2</sup>	52
Flour, buckwheat, whole groats <sup>2</sup>	120
Flour, corn, whole grain, yellow <sup>2</sup>	117
Flour, rice, brown <sup>2</sup>	158

## Calculation Methods for Grain Ounce Equivalents for Grades K-12 in the NSLP and SBP

Table 6. Weights of 1 cup of commonly used grain ingredients <sup>1</sup> , <i>continued</i>	
Food item	Weight (grams) per cup
Flour, rice, white <sup>2</sup>	158
Flour, rye, dark <sup>2</sup>	128
Flour, rye, light <sup>2</sup>	102
Flour, wheat, white, all-purpose enriched, bleached <sup>2</sup>	125
Flour, wheat, white, all-purpose enriched, unbleached <sup>2</sup>	125
Flour, wheat, white, bread, enriched <sup>2</sup>	137
Flour, wheat, white, cake, enriched, unsifted, dipped <sup>2</sup>	137
Flour, wheat, white, self-rising, enriched <sup>2</sup>	125
Flour, wheat, whole grain <sup>2</sup>	120
Wheat germ, uncooked, plain <sup>2</sup>	88
Wheat germ, toasted, plain <sup>2</sup>	115
Oat bran, raw <sup>2</sup>	94
Oat bran, cooked <sup>2</sup>	219
Oats, rolled, quick, uncooked <sup>2</sup>	81
Oats, rolled, regular, uncooked <sup>2</sup>	81
<p><sup>1</sup> The use of brand-name products is solely for clarification regarding serving sizes and does not constitute approval or endorsement by the USDA or CSDE. The actual weight of 1 cup may be more or less than the weights in this chart, depending on the measuring method used, e.g., stirred or unstirred, sifted or unsifted, spooned or dipped, and coarsely or finely crushed. For the most accurate conversion of volume to weight, calculate the average weight of 1 cup of the ingredient by measuring and weighing several samples. For more information, refer to the CSDE's <i>Yield Study Data Form for Child Nutrition Programs</i>.</p> <p><sup>2</sup> USDA's FoodData Central database (Standard Reference (SR) Legacy Data): <a href="https://fdc.nal.usda.gov/">https://fdc.nal.usda.gov/</a></p> <p><sup>3</sup> General Mills Cereals: <a href="https://www.generalmills.com/en/Brands/Cereals">https://www.generalmills.com/en/Brands/Cereals</a></p> <p><sup>4</sup> Kellogg's Cereals: <a href="https://www.kelloggs.com/en_US/home.html">https://www.kelloggs.com/en_US/home.html</a></p> <p><sup>5</sup> Quaker Cereals: <a href="https://www.quakeroats.com/products">https://www.quakeroats.com/products</a></p>	

# Calculation Methods for Grain Ounce Equivalents for Grades K-12 in the NSLP and SBP

**Table 7. Using method 2 (creditable grains) to calculate the ounce equivalents for recipes listing the volume of grain ingredients**

Multi-grain bread <sup>1</sup>			
25 servings (one piece)		Convert cups to grams	
Grain ingredient	Measure	Grams per cup <sup>2</sup>	Weight (grams)
Whole-wheat flour	2 cups	X 120 =	240.00 grams
Rolled oats <sup>3</sup>	<sup>3</sup> / <sub>4</sub> cup	X 181 =	60.75 grams
All-purpose enriched flour	2 cups	X 125 =	250.00 grams
Enriched cornmeal	<sup>1</sup> / <sub>4</sub> cup	X 138 =	34.50 grams
Total weight of creditable grains:			585.25 grams
<p>1. Determine the <b>combined weight (grams)</b> of all creditable grains in the recipe.</p> <p>300.75 grams of whole grains (whole-wheat flour and rolled oats) + 284.5 grams of enriched grains (all-purpose enriched flour and enriched cornmeal) = <b>585.25 grams</b> of creditable grains</p>			
		<b>A</b>	585.25 grams
<p>2. List the <b>number of servings</b> in the recipe.</p>			
		<b>B</b>	25 servings
<p>3. Determine the <b>grams of creditable grains</b> per serving: Divide A by B.</p>			
		<b>C</b>	23.41 grams
<p>4. Determine the <b>ounce equivalents</b> per serving: Divide C by 16 (1 ounce equivalent = <b>16 grams</b> of creditable grains). <sup>3</sup></p>			
		<b>D</b>	1.46 ounce equivalents
<p>5. Round <b>down</b> the number in D to the <b>nearest <sup>1</sup>/<sub>4</sub> ounce equivalent</b>. For example, 1.49 and 1.27 round down to 1.25, and 1.24 rounds down to 1.</p>			
		<b>E</b>	1.25 ounce equivalents
<p><b>Summary of crediting information:</b> The recipe's serving (one piece) credits as <b>1<sup>1</sup>/<sub>4</sub> ounce equivalents</b> of the grains component.</p>			
<p><sup>1</sup> This recipe is WGR because the whole grains (300.75 grams) weigh more than the enriched grains (284.5 grams) and the recipe does not contain any noncreditable grains.</p> <p><sup>2</sup> The grams per cup are from the USDA's <a href="#">FoodData Central</a> database (Standard Reference (SR) Legacy Data).</p> <p><sup>3</sup> Dry cereal grains used as an ingredient in a recipe (such as rolled oats and cornmeal) credit the same as groups A-G. They require 16 grams of creditable grains to credit as 1 ounce equivalent and at least 8 grams of whole grains per ounce equivalent to be WGR.</p>			

# Calculation Methods for Grain Ounce Equivalents for Grades K-12 in the NSLP and SBP

## Resources

Accepting Processed Product Documentation in the NSLP and SBP (CSDE):

[https://portal.ct.gov/-/media/SDE/Nutrition/NSLP/Crediting/Accepting\\_Proccsed\\_Product\\_Documentation\\_SNP.pdf](https://portal.ct.gov/-/media/SDE/Nutrition/NSLP/Crediting/Accepting_Proccsed_Product_Documentation_SNP.pdf)

Basics at a Glance Portion Control Poster (Institute of Child Nutrition):

<https://theicn.org/icn-resources-a-z/basics-at-a-glance/>

Crediting Breakfast Cereals for Grades K-12 in the NSLP and SBP (CSDE):

[https://portal.ct.gov/-/media/SDE/Nutrition/NSLP/Crediting/Credit\\_Cereals\\_SNP\\_grades\\_K-12.pdf](https://portal.ct.gov/-/media/SDE/Nutrition/NSLP/Crediting/Credit_Cereals_SNP_grades_K-12.pdf)

Crediting Enriched Grains in the NSLP and SBP (CSDE):

[https://portal.ct.gov/-/media/SDE/Nutrition/NSLP/Crediting/Credit\\_Enriched\\_Grains\\_SNP.pdf](https://portal.ct.gov/-/media/SDE/Nutrition/NSLP/Crediting/Credit_Enriched_Grains_SNP.pdf)

Crediting Foods in School Nutrition Programs (CSDE webpage):

<https://portal.ct.gov/SDE/Nutrition/Meal-Patterns-School-Nutrition-Programs>

Crediting Whole Grains in the NSLP and SBP (CSDE):

[https://portal.ct.gov/-/media/SDE/Nutrition/NSLP/Crediting/Credit\\_Whole\\_Grains\\_SNP.pdf](https://portal.ct.gov/-/media/SDE/Nutrition/NSLP/Crediting/Credit_Whole_Grains_SNP.pdf)

Food Buying Guide for Child Nutrition Programs (USDA):

<https://www.fns.usda.gov/tn/food-buying-guide-for-child-nutrition-programs>

FoodData Central (USDA):

<https://fdc.nal.usda.gov/>

Grain Ounce Equivalents for Grades K-12 in the NSLP and SBP (CSDE):

[https://portal.ct.gov/-/media/SDE/Nutrition/NSLP/Crediting/Grains\\_Oz\\_Eq\\_SNP\\_grades\\_K-12.pdf](https://portal.ct.gov/-/media/SDE/Nutrition/NSLP/Crediting/Grains_Oz_Eq_SNP_grades_K-12.pdf)

Meal Patterns for Grades K-12 in School Nutrition Programs (CSDE webpage):

<https://portal.ct.gov/SDE/Nutrition/Meal-Patterns-School-Nutrition-Programs>

Meeting the Whole Grain-rich Requirement for the NSLP and SBP Meal Patterns for Grades K-12 (CSDE):

[https://portal.ct.gov/-/media/SDE/Nutrition/NSLP/Crediting/WGR\\_Requirement\\_SNP\\_grades\\_K-12.pdf](https://portal.ct.gov/-/media/SDE/Nutrition/NSLP/Crediting/WGR_Requirement_SNP_grades_K-12.pdf)

Menu Planning Guide for School Meals for Grades K-12 (CSDE):

<https://portal.ct.gov/SDE/Nutrition/Menu-Planning-Guide-for-School-Meals>



# Calculation Methods for Grain Ounce Equivalents for Grades K-12 in the NSLP and SBP

Product Formulation Statement for Documenting Grains in Child Nutrition Programs (USDA):

[https://www.fns.usda.gov/sites/default/files/resource-files/PFS\\_Grains\\_Oz\\_Eq\\_Fillable\\_508.pdf](https://www.fns.usda.gov/sites/default/files/resource-files/PFS_Grains_Oz_Eq_Fillable_508.pdf)

Product Formulation Statement for Documenting Grains in Child Nutrition Programs – Completed Sample (USDA):

[https://www.fns.usda.gov/sites/default/files/resource-files/PFS\\_Example\\_Grains\\_Oz\\_Eq.pdf](https://www.fns.usda.gov/sites/default/files/resource-files/PFS_Example_Grains_Oz_Eq.pdf)

Product Formulation Statements (CSDE):

[https://portal.ct.gov/-/media/SDE/Nutrition/NSLP/Crediting/Product\\_Formulation\\_Statements.pdf](https://portal.ct.gov/-/media/SDE/Nutrition/NSLP/Crediting/Product_Formulation_Statements.pdf)

Recipe Analysis Workbook (USDA’s Food Buying Guide for Child Nutrition Programs):

<https://www.fns.usda.gov/tn/food-buying-guide-interactive-web-based-tool>

Resources for the School Meal Patterns for Grades K-12 (CSDE):

[https://portal.ct.gov/-/media/SDE/Nutrition/NSLP/MealPattern/Resources\\_School\\_Meal\\_Patterns\\_grades\\_K-12.pdf](https://portal.ct.gov/-/media/SDE/Nutrition/NSLP/MealPattern/Resources_School_Meal_Patterns_grades_K-12.pdf)

Standardized Recipes (“Documents/Forms” section of the CSDE’s Crediting Foods in CACFP Child Care Programs webpage):

<https://portal.ct.gov/SDE/Nutrition/Crediting-Foods-in-School-Nutrition-Programs#StandardizedRecipes>

USDA Final Rule (83 FR 63775): Child Nutrition Programs: Flexibilities for Milk, Whole Grains, and Sodium Requirements:

<https://www.govinfo.gov/content/pkg/FR-2018-12-12/pdf/2018-26762.pdf>

USDA Memo SP 30-2012: Grain Requirements for the National School Lunch Program and School Breakfast Program:

<https://www.fns.usda.gov/school-meals/grain-requirements-national-school-lunch-program-and-school-breakfast-program>

USDA Memo SP 34-2019, CACFP 15-2019 and SFSP 15-2019: Crediting Coconut, Hominy, Corn Masa, and Masa Harina in the Child Nutrition Programs:

<https://www.fns.usda.gov/cn/crediting-coconut-hominy-corn-masa-and-masa-harina-child-nutrition-programs>

Whole Grain Resource for the National School Lunch and School Breakfast Programs:

<https://www.fns.usda.gov/tn/whole-grain-resource-national-school-lunch-and-school-breakfast-programs-0>

Yield Study Data Form for Child Nutrition Programs (CSDE):

[https://portal.ct.gov/-/media/SDE/Nutrition/NSLP/Crediting/Yield\\_Study\\_Form.pdf](https://portal.ct.gov/-/media/SDE/Nutrition/NSLP/Crediting/Yield_Study_Form.pdf)

# Calculation Methods for Grain Ounce Equivalents for Grades K-12 in the NSLP and SBP



For more information, refer to the CSDE's *Menu Planning Guide for School Meals for Grades K-12* and visit the CSDE's *Meal Patterns for Grades K-12 in School Nutrition Programs* and *Crediting Foods in School Nutrition Programs* webpages, or contact the *school nutrition programs staff* in the CSDE's Bureau of Health/Nutrition, Family Services and Adult Education, 450 Columbus Boulevard, Suite 504, Hartford, CT 06103-1841.

This document is available at [https://portal.ct.gov/-/media/SDE/Nutrition/NSLP/Crediting/Grain\\_Calculation\\_SNP\\_grades\\_K-12.pdf](https://portal.ct.gov/-/media/SDE/Nutrition/NSLP/Crediting/Grain_Calculation_SNP_grades_K-12.pdf).

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- (3) email: [program.intake@usda.gov](mailto:program.intake@usda.gov).

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